

## CLAIMS

1. Single stranded oligonucleotides chosen from among the oligonucleotides comprising a sequence of at least 12 consecutive nucleotide motifs included in one of the sequences SEQ ID N° 1 to SEQ ID N° 4 in which "N" represents an identical or different nucleotide chosen from among inosine or an equimolar mixture of 4 different nucleotides chosen from among A, T, C or G and among the complementary oligonucleotides of these oligonucleotides.
2. Oligonucleotides according to claim 1, characterised in that they contain 12 to 35 nucleotide motifs.
3. Oligonucleotides according to claim 2, characterised in that they have a sequence chosen from among sequences SEQ ID N° 1 to 4 and the complementary sequences.
4. Oligonucleotides according to one of claims 1 to 3, characterised in that "N" represents inosine.
5. Oligonucleotides according to one of claims 1 to 3, characterised in that they comprise a mixture of oligonucleotides comprising sequences included in one of sequences SEQ ID N° 1 to 4 in which all of the nucleotides A, T, C and G are represented at each of the positions where "N" appears.
6. Probe for the detection, in a biological sample, of bacteria belonging to the order of *Spirochaetales* characterised in that they include a nucleotide according to one of claims 1 to 5.
7. Probe according to claim 6, characterised in that it is immobilised on a solid support.
8. Probe according to claim 7, characterised in that it is marked with a tracing agent.
9. Method to determine whether at least one bacteria belonging to the order of *Spirochaetales* is present in a sample containing or likely to contain nucleic acids from at least one such bacteria, characterised in that the said sample is put into contact with at least one probe according to any one of claims 6 to 8, then to determine whether a hybridisation complex is formed between the probe and the nucleic acid in the sample.
10. Nucleotide primer that can be used for the synthesis in the presence of a polymerase, and the total or partial sequencing of gene *rpoB* in any one of the species of bacteria belonging to the order of *Spirochaetales*, characterised in that it includes an oligonucleotide according to one of claims 1 to 5.
11. Method according to claim 9, characterised in that a fragment of gene *rpoB* of the said bacteria is amplified with at least one primer according to claim 10. The said fragment is then put into contact with a probe of the said bacteria according to one of claims 6 to 8, and whether a hybridisation complex is formed between the said probe and the said fragment is determined.
12. Method to determine whether at least one bacteria belonging to the order of *Spirochaetales* is present in a sample containing or likely to contain nucleic acids from at least one such bacteria, characterised in that the said sample is put into contact with the primers according to claim 10. An amplification is then carried out and the presence or absence of an amplification product is determined.
13. Method according to claim 12, characterised in that the sequencing of a amplified fragment of gene *rpoB* is carried out and the sequence of the said fragment obtained is compared with the known sequence of gene *rpoB* of the

said bacteria. The presence of the species of the said bacteria is determined if the sequencing of the said fragment obtained is identical to that of the known sequence.

14. Detection probe in a biological sample, specific for a species of bacteria belonging to the order of *Spirochaetales*, characterised in that it includes a fragment of gene *rpoB* that can be obtained by amplification by means of a primer according to claim 10.
15. Gene therapy probe, characterised in that it includes an oligonucleotide according to one of claims 1 to 5.